

University of Northern Colorado

## Scholarship & Creative Works @ Digital UNC

---

University Libraries Faculty Publications and  
Presentations

University Libraries

---

2019

### Debating Student Privacy in Library Research Projects Paper

Jennifer Mayer

*University of Northern Colorado*, [jennifer.mayer@unco.edu](mailto:jennifer.mayer@unco.edu)

Rachel Dineen

[rachel.dineen@unco.edu](mailto:rachel.dineen@unco.edu)

Follow this and additional works at: <https://digscholarship.unco.edu/libfacpub>

 Part of the [Library and Information Science Commons](#)

---

#### Recommended Citation

Mayer, Jennifer and Dineen, Rachel, "Debating Student Privacy in Library Research Projects Paper" (2019).  
*University Libraries Faculty Publications and Presentations*. 92.  
<https://digscholarship.unco.edu/libfacpub/92>

This Article is brought to you for free and open access by the University Libraries at Scholarship & Creative Works @ Digital UNC. It has been accepted for inclusion in University Libraries Faculty Publications and Presentations by an authorized administrator of Scholarship & Creative Works @ Digital UNC. For more information, please contact [Jane.Monson@unco.edu](mailto:Jane.Monson@unco.edu).

# Debating Student Privacy in Library Research Projects

*Jennifer Mayer and Rachel Dineen\**

## Introduction

As pressure increases for librarians and administrators to demonstrate the value of academic libraries, there is a parallel concern regarding student data privacy in terms of learning analytics and other data tracking methods used by universities. The intersection where demonstrating the value of academic libraries meets student privacy is a crucial, controversial, and timely debate for our profession. This contributed paper provides an overview of the debate about student privacy and library research projects, a discussion of the evolution of our study, the next steps we will take as a result of our work, and recommendations for others who aspire to do this type of project.

## Debating Student Privacy *Issues of Privacy in Library Value Studies*

Privacy is a fundamental right that librarians are taught to both champion and safeguard for their patrons. Governing organizations such as ALA and IFLA have explicit statements regarding the importance of protecting patrons' private information.<sup>1</sup> In higher education, academic librarians are faced with a particularly difficult privacy challenge. In what Karen Coombs refers to as the privacy tightrope, academic librarians can find themselves walking a fine line that "stretches between the libraries' protection of user privacy and their fulfillment of institutional mission and goals."<sup>2</sup> With the amount and range of data that could be gathered in library value studies, walking this privacy tightrope becomes much more precarious.

One way academic libraries can gather information on their patrons is through learning analytics, which according to the First International Conference on Learning Analytics and Knowledge, is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.<sup>3</sup> Using learning analytics can be very appealing because it is not associated with any specific platform or technology and can be used to examine many different types of student data.<sup>4</sup> Positive aspects to learning analytics include improving curriculum, informing instructional design, and using the data as an early warning system for students experiencing academic challenges. While these data can help academic librarians understand how their libraries' resources and services are being utilized, they also prompt concern for student privacy and confidentiality. In their recent article on learning analytics and the academic library, Kyle M. L. Jones and Dorothea Salo argue that "students may chill their intellectual behavior due to privacy invasion from librarians participating in LA [learning analytics]" and that this chilling effect could have further negative impacts on individual students and the larger campus community.<sup>5</sup> Audrey Watters warns of "confusing surveillance for care" in the educational technology landscape.<sup>6</sup>

---

\* *Jennifer Mayer, Head of Library Research Services, Assistant Professor, University of Northern Colorado Libraries, [jennifer.mayer@unco.edu](mailto:jennifer.mayer@unco.edu). Rachel Dineen, Information Literacy Librarian, Assistant Professor, University of Northern Colorado Libraries, [rachel.dineen@unco.edu](mailto:rachel.dineen@unco.edu)*

## *Library Value Studies in Practice*

There is an increasing amount of discussion in academic librarianship regarding student privacy and the use of student data. *The Value of Academic Libraries (VAL): A Comprehensive Research Review and Report*, published in 2010, started a significant conversation in our profession.<sup>7</sup> Although much of the scrutiny and critique of the report relates to the focus on student indicators like grade point average (GPA) and retention (and privacy issues related to learning analytics), the report also makes many recommendations on how to show value in other ways, such as making visible the work librarians do with faculty members, and institutional offices of assessment and research. The VAL research agenda describes ten areas of library value for study and analysis. Although the agenda includes suggested study areas that are quantitative in nature (student retention and graduation statistics, GPA) there is also a section about student experience, attitude, and perception of quality, as well as several other areas of library value studies, such as faculty productivity, grants, and institutional reputation and prestige.

*The VAL Report* and the accompanying research agenda resulted in the creation of many robust research studies regarding library value. The majority of these studies focus on factors related to library use and student retention and academic success (typically, GPA). University of Minnesota librarians and a research analyst conducted an early library use and value study in 2013. They used learning analytics in their research to demonstrate the impact of library use on student retention and academic success.<sup>8</sup> In typical library value studies, the type of data gathered can range from the number of instruction sessions attended or library books checked out to a student's gender, ethnicity, or GPA. The authors concluded that library use correlated to higher GPAs and retention rates; and they recommended that other campuses seek ways to begin collecting nuanced forms of library usage, such as seeking evidence of the impact of libraries on students' sense of belonging, satisfaction, and student learning or development outcomes.<sup>9</sup>

In 2017, Zoe Fisher questioned the sole use of quantitative research to conduct studies about the value of academic libraries.<sup>10</sup> The following year, Meredith Farkas expressed concerns about patron privacy as it relates to some libraries' increasing involvement with the mining of learning analytics data without students' knowledge.<sup>11</sup> Librarians at Nevada State College, a fully digital academic library, designed a library value study focused on collecting quantitative data gathered from EZProxy logins. The authors discuss their work to mitigate risks of privacy infringement by working with their Office of Institutional Research to help anonymize user data and restrict access to the information gathered.<sup>12</sup> They acknowledge that privacy concerns are still present, but "the possible benefits for improving student learning may outweigh them."<sup>13</sup>

In order to show the value of libraries, some institutions include library data points within institutional learning analytics platforms. A common refrain in the literature on this subject is that the current higher education landscape involves answering to the bottom line of administrators. Student data is in demand by multiple entities: higher education, institutional researchers, software and content vendors, government agencies, and other third parties. A recent book edited by Marwin Britto and Kirsten Kinsley provides a close look at some of these issues surrounding library value studies.<sup>14</sup> Sarah Hartman-Caverly's chapter describes a counterproposal to the University of Minnesota model of library assessment and states that qualitative strategies are key.<sup>15</sup> She suggests that transparent data collection that leverages focus groups, testimonials, advisory committees, feedback forms and self-studies are crucial to allow us to interpret and convey the "humanist meaning and value of our work" and are practices "free from the taint of surreptitious clickstream data capture."<sup>16</sup> We agree that qualitative data can help provide more meaningful and actionable library assessment data.

In a 2018 talk, Zoe Fisher further explored the academic libraries' relationship to student success.<sup>17</sup> She asserts that the most important question a library should ask is, "what do students really need from an academic library in order to be successful in college?"<sup>18</sup> Fisher recommends the approach of "asking open-ended ques-

tions without an agenda to prove your value and be willing to make changes to improve.”<sup>19</sup> She goes on to share that her issue is “not about research studies that look at student behavior in the aggregate,” and acknowledges several effective approaches in the Assessment in Action (AiA) studies.<sup>20</sup> Nevertheless, the gathering of student data without their knowledge—or having the knowledge to opt in or opt out of such data gathering—is very problematic.

## Our Project

Our project focuses on student retention and academic achievement and correlations with use of library services (instruction, research consultations, materials checkout, and library computer use). The study was initially conceived as a traditional values study examining numerical data and making correlations, if any, between library use and student success measured by fall-to-fall semester retention, and grade point average. The study was also envisioned as a four-year longitudinal study, to examine if library use has a tie to graduation rates. Our research questions follow:

- How does use of specific library services correlate to academic achievement for undergraduate students?
- How does use of specific library services correlate to retention (one semester to the next) for undergraduate students?
- Is there a positive correlation between number of uses of library services and academic achievement for undergraduate students?
- What, if any, correlation exists between use of library services and 4-year graduation rates? 5-year? 6-year?

As we explored the literature and reflected more on why we were doing this study, we determined that, ultimately, we are invested in learning how we can improve services for students and help them be as successful as possible. Lynn Silipigni Connaway describes the four points of the “assessment mindset” as goal stating, claiming your team, collecting tools, and making commitment to change.<sup>21</sup> We strongly view this project as a catalyst for positive change and intend to use our findings to inform concrete strategies for improving student services in our library.

As our study progressed, we developed a concern for student privacy and made the decision to contextualize the numerical data with student experiences in their words. It became apparent once we reviewed the numerical data from our office of Institutional Reporting and Analysis Services (IRAS) that we needed to delve into qualitative measures and activate the student voice. We realized we did not wish to make assumptions based only on the numerical data we received. While robust, the numbers left us wanting to know more directly from our students. We share Hartman-Caverly’s and Fishers’ concerns that value studies typically do little to help students. Our vision for academic library value research involves mixed methods research, which is a way to bridge the conversation about library value through quantitative and qualitative methods. We determined that rather than relying on exclusively numerical data as many value studies have, we would interview undergraduate students to bring their voice and input into our project.

Being aware of higher education projects utilizing FitBits,<sup>22</sup> Amazon voice services like Alexa and Echo,<sup>23</sup> and learning analytics concerned us, and we gave serious consideration to avoid compromising student privacy as the project progressed. To be clear, we are not using learning analytics in our study. We partnered with our institution’s IRAS office in order to gather data in strictly aggregate form. We did not use data on remote access to our databases. The authors are in the fortunate position of guiding this study rather than feeling pressure to prove our value to our institution.

We designed interview questions for one-on-one student interviews in order to obtain personal stories about how students' library experiences enhance their academic careers and how using library services contributes to their success as students—or not. We piloted our interview questions with student participants in order to refine the final interview questions.<sup>24</sup> Our aim was to determine what students need to be successful, and to help identify if, and how, the academic library can provide unique support to encourage student success. Our interview questions follow:

- What is your year in school and major?
- When you think of the UNC library, what words come to mind?
- What motivates you to do well in school?
- Do you use the UNC library? How? Why do you use those resources or spaces? If no, why not?
- How do you define academic success? What does it mean to you?
- What roles does (or can) the UNC library play in your academic career?
- What could the UNC Libraries do more of, or differently, to improve your success? (Follow up: what types of events, trainings, furniture, etc. would you like?)
- Picture yourself doing homework or a research project. Where are you, what are you doing? (Follow up: Does the library factor into your process? If so, how?)
- What do you think of the UNC Libraries environment?
- Please finish the sentence: What if the UNC Libraries...
- Do you have any other comments?

We strove to make the interview process as student-friendly as possible. We received positive feedback from our pilot student interviewees regarding the specificity of the questions as well as the decision to send them the list of interview questions before the interview. Initially, we included an interview question on library data privacy concerns of students: “The library collects some student data but keeps it private. Do you have concerns about the privacy of your information as a student?” If yes, what are those concerns? If not, why not?” One response was “Not really, I mean the one thing that has concerned me is that on URSA,<sup>25</sup> where you can type in and find anyone’s contact info...” Another response to this question was, “Not really, because I feel like if it is kept private—if it’s for records and stuff, that’s fine with me.” Based on feedback from the pilot participants, we deleted this question because they indicated little concern for privacy of their library data. In our future interviews, we will offer participants an opportunity to review their answers and make any final changes to ensure that we are conveying their true intent before we get into the analysis stage of the research process. For future participants, we also decided to offer a monetary thank you gift to acknowledge their time and input.

## Next Steps

While our work on this project is ongoing, we have identified areas where we would like to expand our knowledge and engagement with issues regarding student privacy and academic success. Although ambitious, we believe these items are both actionable and attainable. Below is a discussion of the steps we will take to complete this research project and ensure that we maintain a student-centered model for assessment in our academic library.

### *Develop a Privacy Statement that Upholds Library Values*

First, we intend to gather information about how our university currently leverages learning analytics. We acknowledge that the privacy policies outlined by our institution<sup>26</sup> do not address the unique situations of information use in the academic library. Therefore, we believe that we need to build on current institutional privacy policies and craft a statement that specifically addresses the potential privacy risks associated with library data

gathering, and share it with the campus community. We envision this statement to be a living document that continues to evolve as technology and the needs of our patrons change. The *Core Values of Librarianship* identified by ALA will serve as the basis for the statement, and further informed by a combination of existing institutional policies and precedent studies.<sup>27</sup>

### *Educate Students, Faculty, and Staff on the Privacy Statement*

Once the privacy statement has been developed—our next, arguably more difficult challenge—will be to disseminate it and educate our community on the issues outlined in the statement. We plan to develop a strategy that addresses the diverse learning needs of our patrons. This may include targeted education for first-year students or liaison-based outreach for faculty and staff. We also plan to leverage our students' knowledge about privacy issues by exploring a potential peer-to-peer instructional model. Our institution has experience with this model, as evidenced by a short article about digital privacy written by a journalism student for an audience of incoming first-year students.<sup>28</sup> This education initiative will definitely not be a discrete step for librarians to achieve, but rather an ongoing and evolving effort for everyone in the library.

### *Complete Data Gathering*

An essential next step for us will be to complete the data gathering phase of our research. We structured our mixed-methods study to evaluate aggregated, anonymous data regarding library use and student success. As outlined above, these numbers will be contextualized by conducting interviews with current students. We want to ask students, both library users and non-users, how they personally define academic success, and follow-up to see if or how the library can help play a role in their conceptions of success. We then plan to publish our findings with the hopes of adding our distinct qualitative take to the growing body of literature on library use and student success.

### *Share our Findings with Colleagues*

Our ultimate goal for this research is to identify areas where librarians can support academic success without infringing on students' individual rights to privacy. In order for this research to inform real change at our institution, we will need to share our findings with our librarian colleagues. We use the liaison model at our library, with librarians providing focused outreach and support to academic departments and units such as the Center for Human Enrichment (an undergraduate student success support unit), the Center for International Education, and the Graduate School. Our hope is that our research findings will provide liaisons with useful information in their support of students.

### *Contextualize and Communicate our Findings with the Academic Community*

For the final step of our research project, we would like to develop a platform to communicate our findings to the larger academic community. However, we are adamant that our findings do not get boiled down into simple statistics that do not acknowledge the larger student experience. Therefore, we envision designing some form of data dashboard that highlights the ways (if any) the library can contribute to student success while also displaying quotes from our interviews. We believe that by emphasizing the student voice, we will help to contextualize the data and provide a broader view of academic achievement. As we worked through this process, we determined that along with getting direct input from students, there are ways to tell the library's story to external audiences without compromising student privacy. Using data dashboards<sup>29</sup> with quotations from students is a powerful way libraries can call attention to, in the students' own words, how libraries play a role in their success.



## Recommendations for Getting Started

For those that want to conduct a student data privacy audit in your library, we encourage you to review the literature and examine both quantitative and qualitative methodologies. Two useful resources are the letter that MacPháidín Library at Stonehill College provides to its students on value studies<sup>30</sup> and the library data audit in Megan Oakleaf's Impact Starter Kit.<sup>31</sup>

While there are arguably multiple benefits to conducting research that explores the value of library services, it is vitally important that we as information professionals acknowledge the ethical issues associated with such studies. Because we are directed by ethical guidelines established by our professional organization, it is our duty to not only understand the personally identifiable information (PII) we collect from our patrons, but to fully realize the potential for privacy infringement that this information represent, and make decisions about whether it should be collected at all.<sup>32</sup> Recognizing that library value studies often involve the collection of various PII, consultation with your institutional review board (IRB) may help to identify any privacy or ethical issues in your research methodology. Oversight from an IRB may also "provide a useful framework for discussing the efficacy of data collection"<sup>33</sup> as well as help determine the productiveness of the proposed value project as a whole.

Ultimately, when starting a library value project, it is important to remember that you as the researcher drive the project, and it is up to you to question the motivations for conducting the research. Initial considerations should include making a commitment to improving library services for learners, helping students achieve their academic goals, and telling your library's unique story in supporting student success.

## Acknowledgements

The authors acknowledge Lyda McCartin (Professor and Head of Information Literacy and Undergraduate Support, UNC Libraries) as the originator of this project and member of the initial research team; Angela Rockwell, Data Analyst and Report Writer (UNC Office of Institutional Reporting and Analysis Services) for her invaluable data gathering and reports; and Jayne Blodgett (Assistant Dean, UNC Libraries) for serving as a liaison to IRAS.

## Endnotes

1. Housed within the Code of Ethics, the American Library Association upholds that, as librarians, "[W]e protect each library user's right to privacy and confidentiality with respect to information sought or received and resources consulted, borrowed, acquired or transmitted." "Code of Ethics", Professional Ethics, American Library Association, last amended January 22, 2008, <http://www.ala.org/tools/ethics>; The International Federation of Library Associations also takes a stance on privacy issues stating, "[L]ibrarians and other information workers respect personal privacy, and the protection of personal data, necessarily shared between individuals and institutions." "Privacy, Secrecy and Transparency," IFLA Code of Ethics for Librarians and other Information Workers, International Federation of Library Associations, last updated December 27, 2016, <https://www.ifla.org/publications/node/11092#privacy>
2. Karen A. Coombs, "Walking a Tightrope: Academic Libraries and Privacy," *Journal of Academic Librarianship* 30, no. 6, (2004): 495.
3. "About," Learning Analytics & Knowledge: February 27-March 1, 2011 in Banff, Alberta, 1st International Conference on Learning Analytics and Knowledge 2011, <https://tekri.athabasca.ca/analytics/>.
4. Alan Rubel and Kyle M. L. Jones, "Student Privacy in Learning Analytics: An Information Ethics Perspective," *The Information Society* 32, no. 2 (2016): 143-159. <https://doi.org/10.1080/01972243.2016.1130502>
5. Kyle M. L. Jones and Dorothea Salo, "Learning Analytics and the Academic Library: Professional Ethics Commitments at a Crossroads," *College and Research Libraries* 79, no. 3 (2018): 313, <https://doi.org/10.5860/crl.79.3.304>
6. Audrey Watters, "Ed-Tech in a Time of Trump," Hack Education, last modified February 2, 2017, <http://hackeducation.com/2017/02/02/ed-tech-and-trump>
7. Megan Oakleaf, *The Value of Academic Libraries: A Comprehensive Research Review and Report* (Chicago: Association of College and Research Libraries, 2010) [http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/val\\_report.pdf](http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/val_report.pdf)
8. Researchers at the University of Minnesota--Twin Cities have published multiple articles on their findings of their extensive library value project. For an introduction see Krista M. Soria, Jan Fransen, and Shane Nakerud, "Library Use and Undergraduate Student Outcomes: New Evidence for Students' Retention and Academic Success," *portal: Libraries and the Academy* 13, no. 2, (2013): 147-164.

9. Soria, Fransen, and Nakerud, "Library Use and Undergraduate Student Outcomes," 160.
10. Zoe Fisher, "Can We Demonstrate Academic Library Value Without Violating Student Privacy," (Presentation, Colorado Academic Library Association: Intellectual and Academic Freedom and the Academic Library, Denver CO, July 21, 2017) <https://quick-askzoe.com/2018/04/15/who-succeeds-in-higher-education/>
11. Meredith Farkas, "We Can, But Should We? When Trends Challenge Our Professional Values," *American Libraries*, March 1, 2018, <https://americanlibrariesmagazine.org/2018/03/01/learning-analytics-we-can-but-should-we/>
12. Tiffany LeMaistre, Qingmin Shi, and Sandip Thanki, "Connecting Library Use to Student Success," *portal: Libraries and the Academy* 18, no. 1 (2018): 117–140.
13. LeMaistre, Shi, and Thanki, "Connecting Library Use to Student Success," 121.
14. Marwin Britto and Kirsten Kinsley, eds., *Academic Libraries and the Academy: Strategies and Approaches to Demonstrate Your Value, Impact, and Return on Investment*, vol. 1 (Chicago: Association of College and Research Libraries, 2018).
15. Sarah Hartman-Caverly, "Our 'Special Obligation' Library Assessment, Learning Analytics, and Intellectual Freedom" in *Academic Libraries and the Academy: Strategies and Approaches to Demonstrate Your Value, Impact, and Return on Investment*, vol. 1 (Chicago: Association of College and Research Libraries, 2018), 61.
16. Hartman-Caverly, "Our 'Special Obligation,'" 61.
17. Zoe Fisher, "Who Succeeds in Higher Education? Questioning the Connection Between Academic Libraries and Student Success," (Presentation, California Academic and Research Libraries conference, April 15, 2018).
18. Fisher, "Who Succeeds in Higher Education?"
19. Fisher, "Who Succeeds in Higher Education?"
20. Fisher, "Who Succeeds in Higher Education?"; *Assessment in Action: Academic Libraries and Student Success*, Association of College and Research Libraries (Chicago: October 9, 2012) <http://www.ala.org/acrl/AiA>
21. Lynn Silipigni-Conaway, "Rust Never Sleeps, Not for Rockers, Not for Libraries," *OCLC Next*, August 1, 2018, <http://www.oclc.org/blog/main/rust-never-sleeps-not-for-rockers-not-for-libraries/>
22. Bill Sherman, "Fitbit Fitness Monitoring Program a Hit at ORU," *Tulsa World*, March 20, 2017, [https://www.tulsaworld.com/homepagelatest/fitbit-fitness-monitoring-program-a-hit-at-oru/article\\_eae41a5e-830a-5270-98de-c1aa62aac28d.html](https://www.tulsaworld.com/homepagelatest/fitbit-fitness-monitoring-program-a-hit-at-oru/article_eae41a5e-830a-5270-98de-c1aa62aac28d.html); Lulu Chang, "Students at Christian College Protest Mandatory Use of FitBits," *Digital Trends*, February 2, 2016, <https://www.digitaltrends.com/health-fitness/oru-fitbit/>
23. Barbara Fister, "Alexa, Tell Me How to Succeed in College," *Library Babel Fish*, Inside Higher Ed, August 5, 2018, <https://www.insidehighered.com/blogs/library-babel-fish/alexa-tell-me-how-succeed-college>
24. One interview question was adapted from a cross-university study conducted by Cinthya Ippoliti, Juliana Nykolaiszyn, and Jackie German, see Cinthya Ippoliti, Juliana Nykolaiszyn, and Jackie L. German, "What if the Library... Engaging Users to Become Partners in Positive Change and Improve Services in an Academic Library," *Public Services Quarterly* 13, no. 1 (2017): 1-14.
25. URSA is our University's online portal for course registration, financial aid, and other logistic or administrative operations.
26. *University Regulations* (University of Northern Colorado, Greeley, CO, September 5, 2018, 3-9-206), 97-98, [https://www.unco.edu/trustees/pdf/University\\_Regulations.pdf](https://www.unco.edu/trustees/pdf/University_Regulations.pdf)
27. "Core Values of Librarianship," American Library Association, adopted June 29, 2004, <http://www.ala.org/advocacy/intfreedom/corevalues>; Amanda Nichols Hess, Rachelle LaPorte-Fiori, and Keith Engwall, "Preserving Patron Privacy in the 21st Century Academic Library," *The Journal of Academic Librarianship* 41 (2015): 105-114, <https://dx.doi.org/10.1016/j.calib.2014.10.010>
28. Jason Keller, "A Starting Guide to Digital Privacy as a College Student," University of Northern Colorado, College-Bound Colorado, November 26, 2018, <https://www.unco.edu/college-bound-colorado/digital-privacy-as-a-college-student.aspx>
29. Lori J. Terrill, "Telling Their Story with Data: What Academic Research Libraries Share on Their Websites," *Journal of Web Librarianship* (November 2018): 1-14, <https://doi.org/10.1080/19322909/2018.1514286>
30. "Student User Study: Student IRB Notification Letter" MacPháidín Library, last updated October 15, 2018, <https://libguides.stonehill.edu/studentuserstudy>
31. Megan Oakleaf, "Library Data Audit," in *Academic Library Value: The Impact Starter Kit* (Chicago: Association of College and Research Libraries, 2017), 49-52.
32. Sarah Prindle and Amber Loos, "Information Ethics and Academic Libraries: Data Privacy in the Era of Big Data," *Journal of Information Ethics* 26, no. 2, (Fall 2017): 22-23.
33. Andrew D. Asher, "Use, Security, and Ethics of Data Collection: Risks, Benefits, and User Privacy: Evaluating the Ethics of Library Data," in *Protecting Patron Privacy: A LITA Guide*, eds. Bobbi Newman and Bonnie Tijerina (Lanham, MD: Rowman & Littlefield, 2017), 46.